



SHEEP AUTO DRAFTER

Instructions - ENG

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Sheep Auto Drafter User Manual
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INTRODUCTION

Welcome to the Sheep Auto Drafter user manual. In it you will find instructions on using the Sheep Auto Drafter and drafting unit as well as hints to help you resolve any problems you encounter.

In designing the Sheep Auto Drafter, Gallagher have continued their tradition of creating products which are functional, practical, easy to use, innovative, and in tune with the needs of the rural market. The use of a ruggedized composite as the main construction material is a breakthrough innovation in stock handling equipment design which comes with a wide range of benefits.

What is the Sheep Auto Drafter?

The Sheep Auto Drafter is a sheep handling unit containing an integrated weighing platform which will connect with a variety of brands of electronic scales. Pneumatically operated gates at either end of the auto drafter allow stock in and out. These can either be controlled automatically, by setting up some conditions in the scales, or manually by the stock handler.

Each side panel contains antennae to allow reading of Electronic ID (EID).

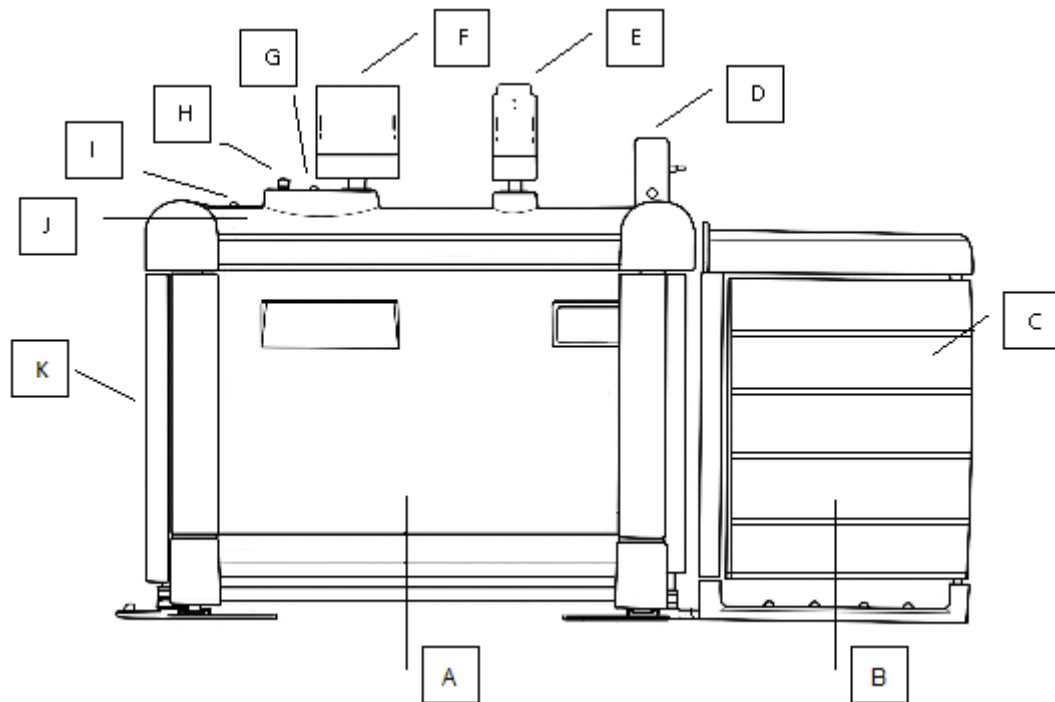
The sorting unit links with the Sheep Auto Drafter to automatically draft stock. The conditions for drafting are set up in the scale indicator attached to the Sheep Auto Drafter. Drafting can also be controlled manually by the operator. An extra sorting unit can be linked end to end to enable up to 5 way drafting.

The Sheep Auto Drafter and sorting unit have both been constructed from composite materials. They are lightweight, making them easy to transport and set up, extremely durable, and because of the forgiving nature of composite they are safe for you and your stock.

When the Sheep Auto Drafter is combined with the sorting unit you can carry out a range of activities including: automatic Electronic ID (EID) reading, weighing and drafting.

The Sheep Auto Drafter can be operated from a distance using a remote control.

The different parts of the Sheep Auto Drafter are shown in the diagram below:



- | | |
|------------------------------|-----------------------------|
| A. Sheep Auto Drafter | G. power button |
| B. sorting unit | H. E-stop button |
| C. drafting gate | I. Entry Gate button |
| D. pressure gauge | J. Control Bridge |
| E. RFID reader | K. entry gate |
| F. scale indicator | |

Figure 1. The different components of the Sheep Auto Drafter.

Figure 2 shows how data is transferred between the different equipment attached to the Sheep Auto Drafter.

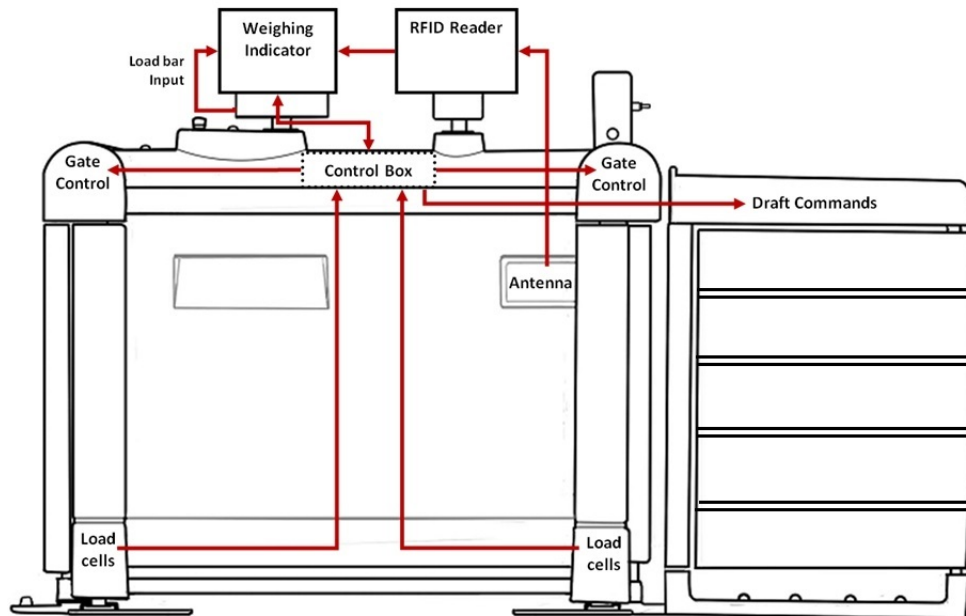


Figure 2. The transfer of information between the different components connected to the Sheep Auto Drafter.

Benefits of using the Sheep Auto Drafter

The benefits you will receive from using the Sheep Auto Drafter include the following:

- **Save time and labour**

One person can operate the Sheep Auto Drafter using a remote control. This means that you will still be in control of its operation while at a distance. Additionally, as you control the gates by using the remote control, the physical demands of operating gates, particularly drafting gates, is removed.

- **Improve work efficiency**

Increase the speed of a variety of stock management tasks and also drafting throughput as the process can be automated. This means stock (and people) spend less time in the yards.

- **Decrease the incidence of injuries for stock and handlers**

The Sheep Auto Drafter is made from composite materials. The chances of injury from collisions or general usage are significantly lower as composite is far more forgiving and there are no sharp or protruding edges. Additionally, the flooring has been designed to provide safe footing so slipping does not occur. All of the moving parts e.g. rams, are protected by guards ensuring there are no trapping points. Additionally, they are substantially lighter than traditional systems, making them much easier to shift.

- **Quiet operation**

The innovative composite construction of the Sheep Auto Drafter and the pneumatic gate operation mean that it is exceptionally quiet when working. This reduces the stress on you and stock. Stock will flow better and will enter the unit more readily as a result.

- **Carry out several stock management tasks at the same time**

The Sheep Auto Drafter can automatically read EIDs, weigh and then draft without you having to control it. All of these actions can be pre-programmed into a scale indicator which will communicate with the Sheep Auto Drafter. This gives you the freedom to move away from the weighing and drafting area, to organise stock at the same time as these actions are occurring.

- **Easy allocation and drafting of stock into different management groups**

Providing your brand and model of weighing indicator supports it, it is a simple process to allocate animals into groups so that they can be managed differently. This could include such things as: the division into different groups by weight to allow priority feeding, or the drafting out of ewes with multiple pregnancies.

- **Improve stock flow through the weighing and drafting system**

As there is less human involvement in the weighing and drafting process stock feel less threatened and more inclined to move freely through the system.

- **Decrease drafting and weighing operator errors and hit the correct target market weight when drafting**

As the weighing and drafting processes are automated there is less chance of error. In addition, accurate weighing and drafting ensures that all stock fall into the correct groups to ensure they achieve premium prices at sale.

Scenarios for use

The flexible nature of the Sheep Auto Drafter allows you to carry out many activities simply and easily. These include:

Automatically

- Weighing animals and releasing them, or drafting them using the weight groupings you have set up in your scales.
- Reading EIDs and weighing animals, then drafting using the weight groupings you have set up in your scales (draft by weight).
- Reading EIDs then drafting using a set of conditions you have set up in your scales (draft by list) (the range of options will be dependent on the brand and model of the attached weighing indicator).

Manually

- Controlling the movements of animals out of the Sheep Auto Drafter yourself.
- Overriding an automatic setting to retain an animal in the unit so that you can examine it for some reason, or draft it in a different direction from the automatic setting.
- Temporarily pause an automatic operation so that you can resolve issues, for example if two animals become caught in the Sheep Auto Drafter.

SETTING UP FOR SUCCESS

Positioning the Sheep Auto Drafter

It is recommended for best performance that the Sheep Auto Drafter is mounted on a hard, level, flat surface. Ideally, particularly for permanent installations, a concrete pad of approximately 900cm (wide) by 2600cm (length) should be laid to fit the Sheep Auto Drafter and a single sorting unit. They should be bolted to it using the mounting holes provided (see *Figure 3*). It is recommended that 4 M10 x 125mm masonry anchors with 10mm x 25mm flat washers and a masonry drill (bit size of 10mm) are used to attach the Sheep Auto Drafter and sorting unit. A permanent mounting also allows for the optimisation of surrounding yards and races to efficiently feed stock into the weighing and drafting set up.



Figure 3. Mounting hole.

Power and compressed air requirements

Both power and compressed air are necessary to operate the Sheep Auto Drafter and sorting unit. An air supply is needed to operate the unit entry and exit gates and also the drafting gates.

Power requirements

The Sheep Auto Drafter is powered by an external 230V to 12V DC adaptor. This comes as part of the package when you buy the Sheep Auto Drafter and can be connected to your AC power supply (input range 100 - 240V AC).

You can also run the Sheep Auto Drafter off a 12V DC battery e.g. a car battery, where there is no conventional power supply.

If you have a scale indicator or a RFID reader attached to the Sheep Auto Drafter they will need to be powered separately (by their own batteries) as no power supply runs to them from the unit.

Note: If you are wanting to read EIDs then make sure you keep the power supply 1m, or more, away from the unit side panels to avoid interference with the RFID reader antennae.

Compressed air requirements

Once the compressor is connected and running you will be able to see what the pressure is at the unit by looking at the pressure gauge attached to the Control Bridge (see *Figure 4*). It should read between 4-6bar (in the green zone). Ensure it does not enter the red zone (>6bar). A reading above 6bar indicates a regulator issue, which would need investigation. Readings below 4bar are likely to be caused by an air supply (compressor) problem. A typical compressor would be a 2HP 24 litre tank single phase machine.



Figure 4. Pressure gauge (on the Control Bridge).

Scales and RFID reader requirements

The Sheep Auto Drafter has been specifically designed to operate with the Gallagher SmartTSi, SmartScale 800, Weigh Scale 810 and Weigh Scale 610 scales. (Please note: Drafting by list is not available on the Weigh Scale 610 scale.) It will also operate with some other brands of weighing indicators - your dealer will know which are compatible.

RFID (radio frequency identification) antennae are installed in each of the unit side panels. A SmartReader BR or R unit is needed to communicate with the antennae.

The antennae will recognise EID which are either HDX (half duplex) or FDX (full duplex), and those which are inserted as implants or boluses (however these are less commonly used).

Recommendations for the construction and use of surrounding yards and races

(adapted from "Behavioral Principles of Livestock Handling" by Temple Grandin)

Race construction leading up to the Sheep Auto Drafter

Sides

Sheep have a wide visual field. The width is affected by the amount of wool they have on their head and ranges from 191 to 306 degrees. Any handling races, including the race leading up to the Sheep Auto Drafter, should have solid side walls to prevent animals from seeing distractions outside the race. Any moving objects, (e.g. people, flapping objects or a coat hung on a race fence) seen through the sides of a race can cause balking or frighten sheep. Solid side walls are especially important if animals are unaccustomed to the facility.

Layout

Curved single file races are recommended for moving sheep up to the Sheep Auto Drafter. A curved race is more efficient for two reasons. Firstly, it prevents the animal from seeing what is at the other end of the race until it is almost there. Secondly, it takes advantage of the natural tendency of sheep to circle around a handler moving along the inner radius of the race.

Width

Ideally the race will be designed in a way that organises sheep into single file by the time they reach the junction with the Sheep Auto Drafter. This helps to ensure that only one sheep enters the Sheep Auto Drafter at a time and makes stock flow smoother. As sheep can be of varying sizes, (e.g. adult sheep and lambs), it is useful to have a race with adjustable sides in the final lead up (the last 180cm). However if the race width is fixed, approximately 50 cm is the recommended width. This is the same dimension as the internal edge of the Sheep Auto Drafter entry gate surround.

Materials

The materials the surrounding races are made of have the potential to affect the reliability of the RFID reader. Metal components are best avoided if possible, particularly if they rub together, as this can cause interference in the signal between the reader and the EID.

Vision and lighting

Where the Sheep Auto Drafter is positioned illumination should be uniform and diffuse, much like a bright cloudy day. Shadows and bright spots should be minimised.

Sheep have a tendency to move from dim areas to brighter areas, provided the light is not glaring in their eyes. Situate the Sheep Auto Drafter to take advantage of natural light. Skylights, combined with other natural lighting, can even out

light levels so consider installing translucent polycarbonate roofing and or walls if the area is dark.

Noise

In facilities where livestock are handled, loud or novel noises should be avoided because they distress livestock. The sound of metal clashing together can cause balking and agitation. As the Sheep Auto Drafter is constructed of composite materials its operation is very quiet but the noise level in the surrounding yards should be considered. The compressor providing air for the Sheep Auto Drafter is best located at a distance to reduce noise levels. Rubber stops on gates in the yards around the Sheep Auto Drafter will help reduce noise.

The effects of pain or fright

Research indicates that sheep can remember a painful or frightening experience for many months. Sheep which had been inverted in a sheep handling machine were more difficult to move through the machine the following *year*¹. The fact that the Sheep Auto Drafter has been designed with the comfort and safety of stock in mind will help to ensure animals' experience of them is positive. This will aid in the smooth entry and flow of stock through the system on future occasions.

It is also worthwhile keeping in mind that livestock which have had gentle handling in the past will be less stressed when they are handled in the future. Think about how your actions will affect your future interactions with stock and the efficiency of the operations you wish to carry out.

Moving the Sheep Auto Drafter

As the Sheep Auto Drafter is very light (~100 kg), due to its construction from composite materials, it can be lifted manually by two people.

Note: Make sure you have the side panels attached when you shift the Sheep Auto Drafter and that they are on the inside slot. Also, close the gates at either end.

¹ Hutson, G.D. (1980). The effect of previous experience on sheep movement through yards. *Applied Animal Ethology* 6 :233.

Transport poles can be purchased from your local Gallagher distributor which can be inserted into slots provided in the gate surrounds (see *Figure 5*). Once the poles have been inserted the Sheep Auto Drafter can be lifted and repositioned (see *Figure 6*).

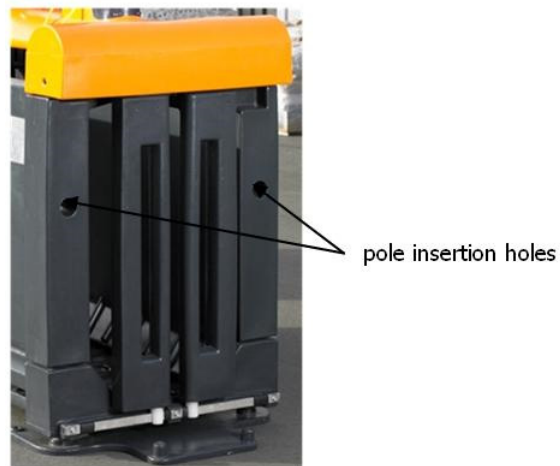


Figure 5. Holes for insertion of transport poles.



Figure 6. Lifting using the transport poles.

Alternatively the Sheep Auto Drafter can be lifted mechanically, (e.g. by forklift), by inserting forks or strops under the floor, or by attaching strops to the four corners of the transport poles (nearest the end supports) and then lifting from overhead with a forklift or loader.

Note: It is VERY IMPORTANT not to lift the Sheep Auto Drafter by the Control Bridge as this action may damage it!

ASSEMBLING THE SHEEP AUTO DRAFTER AND SORTING UNIT

Assembling the Sheep Auto Drafter

The Sheep Auto Drafter should be assembled when you purchase it. All you will need to do is attach the following:

- air supply
- power supply
- scale indicator (if using)
- RFID reader (if using)
- sorting unit(s) (if using)

Attaching the scales indicator and RFID reader

To find out how to do this see *How to turn the Sheep Auto Drafter on* (p 28).

Assembling the sorting unit

After you purchase the sorting unit you will need to assemble it. The following instructions explain how to do this.



Figure 7. Drafting unit components

Tools required

- 3/8in socket
- 13mm socket
- 17mm combination spanner

Method

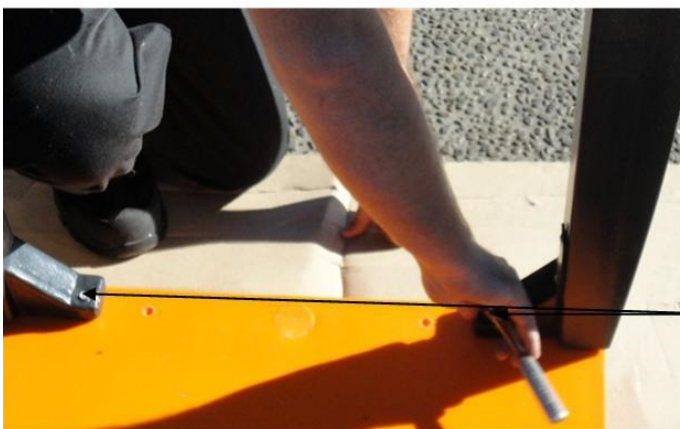
1. The sorting unit will be assembled upside down, so place the roof upside down on the ground.



2. Attach the two tie bars to the rear of the roof and screw them on with two Tek screws (14 gauge x 50mm). There is a left and right hand side, the inside edge will be stepped in (see photo below).
Tool required: 3/8in socket.



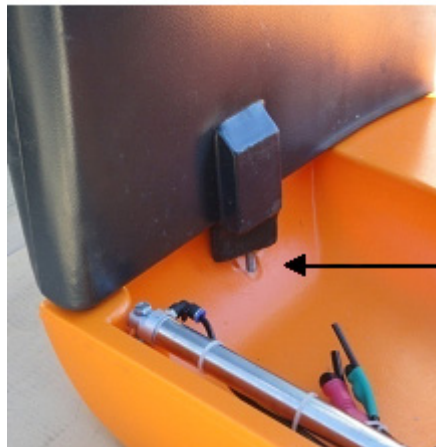
stepped in edge



attaching Tek screws

3. Attach doors by inserting shafts in holes in the roof. The left and right doors are different so make sure the bolt to attach the air cylinders is on the

inside. The door pivot tubes should be inserted with the white bolt guide into the roof.



inside edge, bolt to
attach air cylinder

4. Attach the floor by inserting the door pivot tubes and tie bars into the holes in the floor (the back and front tubes are different sizes - those at the drafting gate end are smaller, so make sure you have the floor around the right way). Keeping the floor level as you push it on will make the job easier.



5. Drop the 4 through bolts into each corner of the floor and tighten (do not over tighten).

Tool required: 13mm socket.



6. Fasten the two air cylinders to the doors by attaching lock nuts and washers (m10 nut, 10mm flat washer) to the end of each one.
Tool required: 17mm combination spanner.



To find out how to attach the sorter to the Auto Drafter see *Connecting the sorting unit to the Sheep Auto Drafter* (p 20), under "Using the Sorting Unit" on page 35 later in this manual.

Adding an extra sorting unit

An extra sorting unit can be attached to the first, end to end using 2 zinc plated hex bolts (M6 x 75mm long) and flat washers (6mm x 22mm long).

Note: When weighing animals it is very important that there is nothing touching the Sheep Auto Drafter as this may affect its accuracy. Take care that the sorter is attached correctly and any lead up races are not touching the Auto Drafter.

USING THE SORTING UNIT

The sorting unit allows you to automatically separate animals into groups by:

- weight, using weight limits set up in the scale indicator;
- reading EIDs and using drafting lists set up in the scale indicator.

Alternatively you can control the sorting unit manually with the remote control.

If you purchase one sorting unit, then animals can be divided into three different groups, however you do have the option of linking an extra sorting unit. This will give you the ability to draft in up to five different directions.

Like the Sheep Auto Drafter, the sorting unit is constructed primarily from composite materials and has pneumatically operated gates, which means it is light, safe to use and very quiet.

How the sorting unit works

You can run the sorting unit automatically, which is probably how you will use it most of the time, or you can run it manually using the remote control. You cannot use it independently from the Sheep Auto Drafter as the Sheep Auto Drafter electronics control the sorting unit operation.

Automatic use

If the sorting unit is working automatically its operation is controlled by the scale indicator, which sends signals through the Sheep Auto Drafter electronics to the sorting unit. You will need to set up weight limits or a drafting list (using EIDs) in the scale indicator to direct the sorting unit. To find out how to do this, refer to your scales user manual.

If you have attached an extra sorting unit then you will need to run it automatically as the remote control can only be used to operate one sorting unit.

Manual use

If the sorting unit is under manual control, the commands from the remote are transmitted through the Sheep Auto Drafter electronics to the sorting unit. You will need to use the remote to make each drafting decision.

For more detailed scenarios covering particular uses of the sorting unit in combination with the Sheep Auto Drafter see *Using the Sheep Auto Drafter* (p 32).

Connecting the sorting unit to the Sheep Auto Drafter

Method

1. Sit the sorting unit about 150mm away from the Sheep Auto Drafter and insert the air lines through the conduit at the top of the sorting unit.



Figure 8. Inserting air lines.

2. Slot the sorting unit onto the spigots protruding upwards from the Sheep Auto Drafter foot. Screw them together with Tek screws (14 gauge 75mm). Tool required: 3/8in socket.



Figure 9. Attaching to Sheep Auto Drafter.

3. Attach the male and female connections on the end of the air lines to their mates inside the roof of the sorting unit. Check the air lines are not sagging as they may get caught when the doors operate.



Figure 10. Attaching air lines.

Note: It is very important that there is nothing touching the Sheep Auto Drafter when it is weighing animals as this may affect its accuracy. This includes the sorting unit, so make sure you attach it correctly.

Using the Remote Control

The buttons to manually control the sorting unit are situated at the top of the remote control (see *Figure 11*). They will allow you to direct animals to the left, straight ahead or right through the first sorting unit attached to the Sheep Auto Drafter. For more about using the remote control see *Using the Remote Control* (p 22).



Figure 11. The sorting unit remote control buttons.

Using an extra sorting unit

It is possible to attach an extra sorting unit to the Sheep Auto Drafter, to allow up to 5 different sorting directions (see *Figure 12*). To control the sorting direction you will need to set up appropriate weight limits or a sorting list in the scale indicator.

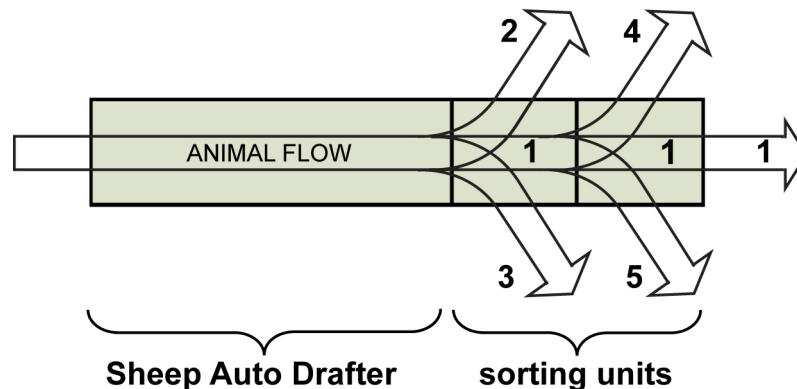


Figure 12. Using an extra sorting unit.


USING THE REMOTE CONTROL

The Sheep Auto Drafter comes with a remote control.

The remote control can be operated from within a 15m radius of the unit, which allows you to carry out tasks at a distance while still maintaining control of the unit operations.

Button functions

The unit can operate in two modes: Automatic Release Mode and Manual Release Mode. The seven buttons on the remote are used to operate the Sheep Auto Drafter and sorting unit in these two modes (see *Figure 13*).

The bottom two green and red buttons are used to operate the unit in Automatic Release Mode. In this mode the unit will automatically release animals, without user intervention, by using conditions set up in the scale indicator prior to the session. Additionally the Entry Gate button  can be used in Automatic Release Mode to control the gate if sheep need to be cleared from the unit. (This button /function is also available on the Sheep Auto Drafter Control Bridge, see Figure 14.)

The top five orange buttons are used to operate the unit in Manual Release Mode. In this mode you can control how an animal exits the unit or interrupt the unit operation, (e.g. to remove an animal if two have accidentally entered the unit).

Using two remote controls

In the situation where you are using two remote controls you need to consider which one is currently "paired up" with the unit. The remote control that you use first during a session will be synchronised with the unit. This means any other remote controls will not operate.

To find out how a remote control is synchronised see *To turn the Sheep Auto Drafter on* (p 28).



Figure 13. Remote control button layout.








Automatic Release Mode (no user interaction)			
Button	Button name	Action	Reasons for use
 green	Start	Start Sheep Auto Drafter operation	At the start of a session. After stopping the unit by using the Stop button, the Gate button or the E-Stop button. To switch to Automatic Release Mode from Manual Release Mode.
 red	Stop	Stop the Sheep Auto Drafter operations	To pause unit operation if you want to go and briefly do something else, (e.g. answer the phone, move sheep).
Manual Release Mode (user controls animal exit)			
orange   	Draft: Left Straight ahead Right	Select drafting direction	When an animal is in the unit, to set the drafting direction and then open the exit gate to release the animal.
 orange	Retain/ Release	Hold an animal in the unit or release an animal from the unit.	To override an automatic release decision and keep an animal in the unit. To release an animal which has been retained.
 orange	Entry Gate	Open and close the entry gate.	To stop the unit operation and open the entry gate, (e.g. if you want to remove a sheep when two have got into the unit, or to let out a sheep which is jammed in the gate). To shut the unit entry gate.

Table 1. Remote control button function.

For scenarios which include more about using the remote control refer to *Using the Sheep Auto Drafter* (p 32).

How it is powered

The remote control requires 2 alkaline AAA batteries to run (do not use rechargeable batteries).

Note: If the batteries in the remote run out while the Sheep Auto Drafter is operating in Automatic Release Mode then the unit will continue operating until it runs out of sheep, or you press the E-Stop button.

If they run out while it is running in Manual Release Mode then it will complete the last action you requested it to do, then it will stop. For more about Automatic and Manual Release Mode see the *Using the Sheep Auto Drafter* (p 32).

PURPOSE AND FUNCTION OF CONTROL BRIDGE LAMPS (LEDS) AND BUTTONS

Lamps

The Control Bridge houses a number of different lamps, both on top and around the front (above the entry gate) (see *Figure 14*). These are intended to give you an indication of the Sheep Auto Drafter's operational status, (i.e. if it is ready to operate, operating normally or has a fault).

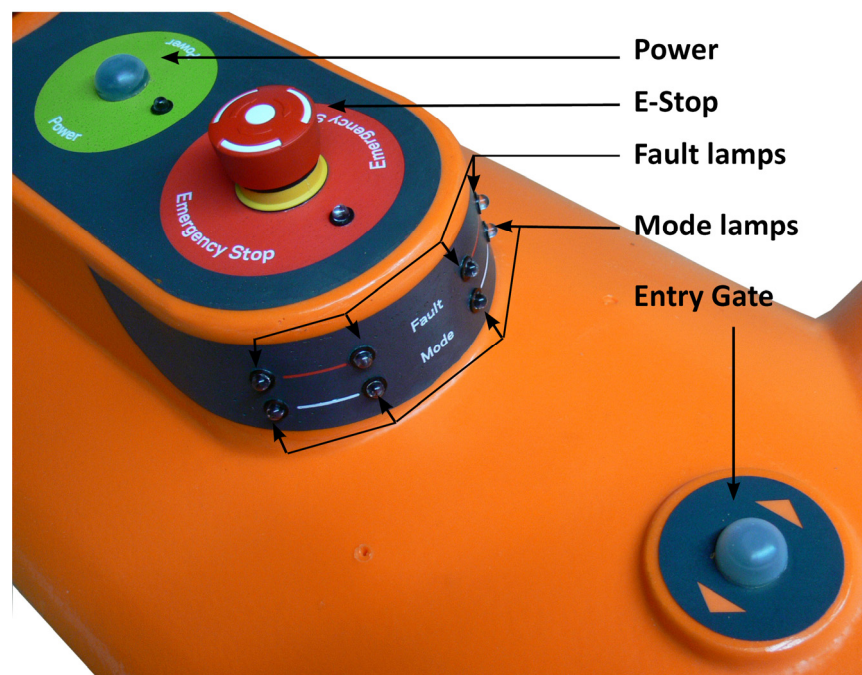


Figure 14. Position of Sheep Auto Drafter Control Bridge lamps and buttons

Table 2 describes the purpose of each lamp. Refer to the *Troubleshooting* (p 42) section for the specifics of how LEDs indicate particular problems.

LED colour	LED position	LED state		
		Off	Flashing	On
Green (power)	Beside power button on Control Bridge	<ul style="list-style-type: none"> Sheep Auto Drafter switched off No power supply Too much power 	Power supply low	Sheep Auto Drafter switched on
White (mode)	Wrapped around	<ul style="list-style-type: none"> Sheep Auto Drafter 	Single flash <ul style="list-style-type: none"> Sheep Auto 	Sheep Auto Drafter is in Automatic

	front of Control Bridge	switched off <ul style="list-style-type: none"> E-Stop button depressed 	Drafter in stand by and ready for operation, waiting for communication from the remote or Entry Gate button on the Control Bridge. Double flash <ul style="list-style-type: none"> Sheep Auto Drafter has been overridden by the Entry Gate button on the Control Bridge, waiting for communication from this button only. 	Release Mode
Red (fault)	Wrapped around front of Control Bridge	<ul style="list-style-type: none"> Sheep Auto Drafter switched off Sheep Auto Drafter operating normally 	Sheep Auto Drafter in a fault state (see <i>Troubleshooting</i> (p 42) for diagnosis)	
Red (E-Stop)	Beside E-Stop button on Control Bridge	<ul style="list-style-type: none"> Sheep Auto Drafter switched off Sheep Auto Drafter operating normally 	E-Stop button depressed	

Table 2. Function of LED lamps

Buttons

The Entry Gate button on the Control Bridge of the Sheep Auto Drafter has more functionality than the same button on the remote control. If the Entry Gate button on the Control Bridge is used to override the entry gate, then **only** the Entry Gate button on the Control Bridge can resume normal operation.

The table below shows the abilities of the Entry Gate button when pressed on the Control Bridge.


Button	Button name	Action	Reasons fo use
	Entry Gate	Open and close the entry gate.	<p>To stop the unit operation and open the entry gate, (e.g. if you want to remove a sheep when two have got into the unit, or to let out a sheep which is jammed in the gate).</p> <p>To shut the unit entry gate.</p> <p>To enter stop mode (ie entry closed, exit open)</p>
		Start the Sheep Auto Drafter in Automatic Release Mode.	<p>The unit has been powered on and the remote is not available.</p> <p>The Entry Gate button on the Control Bridge, remote control or STOP button was used to override the entry gate.</p> <p>A fault condition has been corrected.</p>

Table 3. Function of Entry Gate button on Control Bridge

TURNING THE SHEEP AUTO DRAFTER ON

How to turn the Sheep Auto Drafter on

Before starting the Sheep Auto Drafter ensure that you have the following correctly attached:

- power
- compressed air
- scales (if weighing animals)

To attach scales:

- Attach the scale indicator to the scales mount - on the top of the Control Bridge.
- Attach the loop back cable which connects the unit and the scale indicator. This will end in an amphenol socket at the scales end.

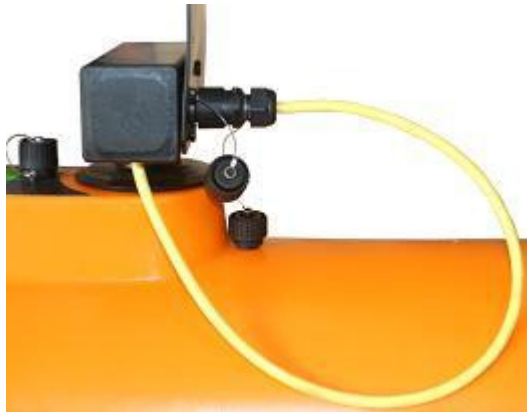


Figure 15. The loop back cable.

- Attach the RS232 cable (comms cable), which connects the unit electronics to Port 1 on the scale indicator. This cable will transmit the drafting decision data from the scale indicator to the unit, so that the drafting gates can be set up.
- If weighing animals with EID, attach the RS232 cable between the scale and the RFID reader.

Note: If you do not wish to weigh animals you need to attach the loop back cable into the socket on the Control Bridge instead of the scale indicator so the Sheep Auto Drafter can still operate.

- RFID reader (if animals have EID)

To attach RFID reader:

- Attach the RFID reader to the reader mount - on the top of the Control Bridge.
- Connect the antenna cable to the RFID reader.

- If weighing or drafting animals too, connect the RS232 cable between the reader and the scale.

Note: If you are not using the Sheep Auto Drafter to read EIDs, (e.g. if it is turned off or you are just using it to manage untagged animals), keep the caps on the sockets where the antennae cables emerge. This will prevent dirt and moisture from getting into the sockets.

To turn the Sheep Auto Drafter on

The Sheep Auto Drafter can be started in Automatic mode either with or without the remote.


The following instructions are used if the E-Stop button is not depressed.

1. Press the Power button, which is situated on the Control Bridge (see *Figure 16*).

The green power light should come on (if it doesn't refer to *Troubleshooting* (p 42) for ideas on how to resolve the problem). The white LED mode lamp will start flashing to indicate that the unit is ready to communicate with the remote control.

2. Start the Sheep Auto Drafter by either;

Using the Remote

Press the green Start button  on the remote control to synchronise it with the Sheep Auto Drafter. The unit will start to operate in Automatic Release Mode.

Or

From the Control Bridge

Press the Entry Gate button on the Control Bridge for 2 seconds or more. The unit will start to operate in Automatic Release Mode.

For more about Automatic Release Mode and how to use the Auto Drafter see *Using the Sheep Auto Drafter* (p 32).

Note: If the Entry Gate button is pressed for less than 2 seconds it will remain in standby mode, awaiting pairing with the remote control or further instruction from the Control Bridge.

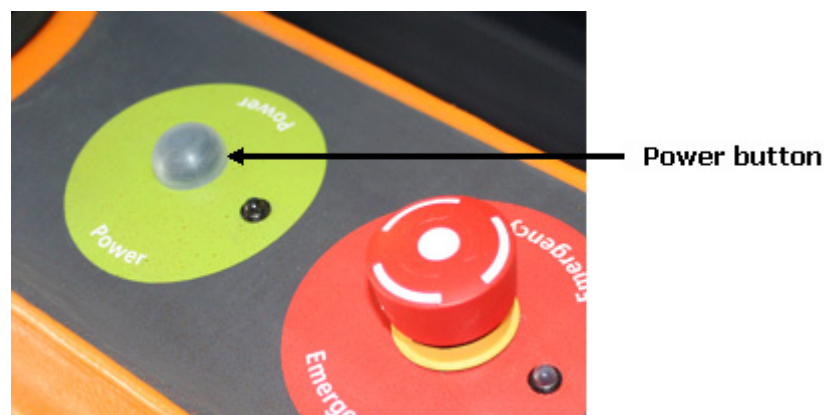



Figure 16. The Sheep Auto Drafter Power button.

To turn the Sheep Auto Drafter on if the E-Stop button is depressed

The procedure to turn the Sheep Auto Drafter on is slightly different if the E-stop button is depressed, however it is not expected that this will be a regular occurrence.

1. Press the Power button, which is situated on the Control Bridge (see *Figure 16*). The green power light should come on (if it doesn't refer to *Troubleshooting* (p 42) for ideas on how to resolve the problem). The white LED mode lamp will now start flashing to indicate that the unit is ready to communicate with the remote control.
2. If the E-Stop button is depressed the red E-Stop LED will start flashing. You need to release the E-Stop button before you can continue with the start up. Once it is released the E-Stop lamp will switch off.
3. Restart the Sheep Auto Drafter by either;

Using the Remote

Press the green Start button  on the remote control to synchronise it with the Sheep Auto Drafter. The unit will start to operate in Automatic Release Mode.

Or

From the Control Bridge

Press the Entry Gate button to resume operations.

For more about this and how to use the Auto Drafter see *Using the Sheep Auto Drafter* (p 32).

For more about the use of the E-Stop button see *Using the E-Stop button to halt Sheep Auto Drafter operation* (p 37).

Adjusting the Sheep Auto Drafter width

Both of the Sheep Auto Drafter side panels can be adjusted to a variety of positions by using the four slots provided on either side. Adjusting them at the bottom of the panel will allow you to resize the unit for different sized animals (so that they are restricted from turning around) and adjusting them at the top will allow more room for handler access to stock. These slots will allow you to resize the unit from 300-525mm wide.

To adjust the Sheep Auto Drafter width

1. Lift the side panel of the unit upwards and drop it into the appropriate slot. One side (the one which is most accessible to the operator) has locking levers. These levers are designed to allow the top to be extended further out for greater operator access. They can be dropped outwards or inwards, into the neighbouring slot, to ensure the panel is locked into position.



Figure 17. Slots and locking lever to allow Sheep Auto Drafter width adjustment.

USING THE SHEEP AUTO DRAFTER

The Sheep Auto Drafter can be run in two different modes: Automatic Release Mode or Manual Release Mode. The one you select will depend on whether you want it to run independently or not. In either case if there are no animals in the unit the Sheep Auto Drafter will automatically allow animals in. However, if it is in Manual Release Mode you will be in control of when they are released and the direction the sorting unit will release them in, whereas in Automatic Release Mode the settings you enter into the scale indicator will determine how the unit and sorting unit will operate.

Automatic Release Mode

It is likely that you will use the unit most frequently in this mode. When the Sheep Auto Drafter is operating in Automatic Release Mode the white mode LED lamps around the front will be on.


The following are some ways you can use the Sheep Auto Drafter and sorting unit while in Automatic Release Mode:

- Weighing animals and releasing.
- Weighing animals and drafting using weight conditions specified in your scale indicator (draft by weight).
- Reading EIDs.
- Reading EIDs and drafting using conditions specified in your scale indicator (draft by list).
- Reading EIDs, weighing and drafting using conditions specified in your scale indicator (draft by weight or list).


Follow the instructions below to carry out each of the scenarios mentioned above.

Note: For instructions on how to set up and use your scale and/or RFID reader you will need to refer to the appropriate user manual.


To weigh and release animals

1. Set up the scale indicator so it is ready to weigh animals automatically.
2. Press the green Start button  on the remote control or press the Entry Gate button on the Control Bridge for 2 seconds or more.
 - The white LED mode lamps will now be on to indicate that you are in Automatic Release Mode.
 - The entry gate will open. Once a sheep has entered the entry gate will close to capture it. When the sheep has been successfully weighed the scale indicator will beep, the exit gate will open and the sheep will be released.


To weigh and draft animals (draft by weight)

1. Set up the scale indicator so it is ready to weigh animals automatically and specify the weight limits for each group.
2. Press the green Start button  on the remote control or press the Entry Gate button on the Control Bridge for 2 seconds or more.
 - The white LED mode lamps will now be on to indicate that you are in Automatic Release Mode.
 - The entry gate will open. When a sheep has entered the entry gate will close to capture it. Once the sheep has been successfully weighed the scale indicator will beep. The scale indicator will display both the animal's weight and the direction it will be drafted in. The exit gate will open and the sheep will be drafted according to the conditions set up in the scale indicator.


To read EIDs

1. Connect the loop back cable into the socket on the Control Bridge, instead of the scale indicator, so that the load cells are not connected.
To find out how to do this see *Using without a scale attached* (p 38).
2. Set up the scale indicator to read EIDs. Make sure the RFID reader is also attached.
3. Press the green Start button  on the remote control or press the Entry Gate button on the Control Bridge for 2 seconds or more.
 - The white LED mode lamps will now be on to indicate that you are in Automatic Release Mode.
 - The entry gate will open. Once a sheep has entered the entry gate will close to capture it. When the EID has been successfully read the exit gate will open and the sheep will be released.


To read EIDs and draft by list (not weighing)

1. Connect the loop back cable into the socket on the Control Bridge, instead of the scale indicator, so that the load cells are not connected.
To find out how to do this see *Using without a scale attached* (p 38).
2. Make sure the RFID reader is connected. Set up the scale indicator to read EIDs and select a draft list.
3. Press the green Start button  on the remote control or press the Entry Gate button on the Control Bridge for 2 seconds or more.
 - The white LED mode lamps will now be on to indicate that you are in Automatic Release Mode.
 - The entry gate will open. Once a sheep has entered the entry gate will close to capture it. When the EID has been successfully read the exit gate will open and the sheep will be drafted according to the conditions set up in the scale indicator.

To read EIDs, weigh and draft by weight

1. Set up the scale indicator so it is ready to weigh animals automatically and specify the weight limits for each group. Make sure the RFID reader is also attached.
2. Press the green Start button  on the remote control or press the Entry Gate button on the Control Bridge for 2 seconds or more.
 - The white LED mode lamps will now be on to indicate that you are in Automatic Release Mode.
 - The entry gate will open. Once a sheep has entered the entry gate will close to capture it. When the EID has been read and the sheep has been successfully weighed the scale indicator will beep. The scale indicator will display both the animal's weight and the direction it will be drafted in. The exit gate will open and the sheep will be drafted according to the weight limits set up in the scale indicator.

To read EIDs, weigh and draft by list



1. Make sure the RFID reader is connected. Set up the scale indicator so it is ready to weigh animals automatically and to read EIDs. Then select a draft list.
2. Press the green Start button  on the remote control or press the Entry Gate button on the Control Bridge for 2 seconds or more.
 - The white LED mode lamps will now be on to indicate that you are in Automatic Release Mode.
 - The entry gate will open. Once a sheep has entered the entry gate will close to capture it. When the EID has been read and the sheep has been successfully weighed the scale indicator will beep. The scale indicator will display both the animal's weight and the direction it will be drafted in. The exit gate will open and the sheep will be drafted according to the conditions set up in the scale indicator.

Manual Release Mode

Use this mode when you would like to run the unit yourself. The entry gate will still open and shut automatically to let animals in and hold them in the unit, but you will be in control of when they are released and the direction they are released in.




To hold an animal in the Sheep Auto Drafter

Use the remote control to manage the release function if you would like to hold an animal in the unit. This is useful if you want to examine an animal for some reason, (e.g. an animal health issue or for tagging an animal).

1. Wait for the unit to open the entry gate and capture the animal, then press the Retain/Release button  on the remote control.
 - This will prevent the exit gate from opening.
 - The white LED mode lamp will begin to flash.
2. Once you have dealt with the animal press the Retain/Release button  again.
 - The exit gate will open and the animal will be released.
 - Then the entry gate will open and the next animal will be captured.




To manually set the drafting direction

Use the remote control to set the drafting direction if you would like to override an automatic drafting decision or you are in Manual Release Mode and you are making all of the drafting decisions yourself.

1. Wait for the unit to open the entry gate and capture the animal, then press the Retain/Release button  on the remote control.
 - This will prevent the exit gate from opening.
 - The white LED mode lamp will begin to flash.
2. Press the appropriate arrow on the remote control  to set up the drafting direction.
 - Once the drafting gate has shifted into position the exit gate will open and the animal will be released.
 - Once the animal has been released the entry gate will open and the next animal will be captured.
3. From here you can continue in manual mode by pressing Retain/Release button  to hold the next animal in the unit until you have set the drafting gates.

To clear multiple animals from the Sheep Auto Drafter

Occasionally multiple animals may enter the unit at the same time. In this scenario you will want to remove the extra animal(s).

1. Press the Entry Gate button on the remote control  or press the Entry Gate button on the Control Bridge.
 - This will open the entry gate.
 - The white LED mode lamp will begin to flash.
2. Remove the extra animal(s).
3. Press the Start  or Retain/Release  button on the remote control to close the gate and restart the unit operation or press the Entry Gate button on the Control Bridge.
 - Pressing Start on the remote or the Entry Gate button on the Control Bridge will put the unit into Automatic Release Mode.
 - Pressing Retain/Release will put it into Manual Release Mode.

If the issue occurs during a weighing session there are two possible additional factors to consider:


- a) Have you pressed the Entry Gate button before the scales have locked in a weight?
- b) Have you pressed the Entry Gate button after the scales have locked in a weight?

If option a) occurs then you don't need to take any further action. However, if option b) occurs it is a good idea to remove the false weight reading from the scale indicator before you continue (to find out how to do this refer to your scale user manual).



Using the Stop button to pause Sheep Auto Drafter operation

Occasionally you may want to briefly stop the Sheep Auto Drafter so that you can carry out another task, (e.g. answer a phone call or shift some sheep which are out of range of the Sheep Auto Drafter).

To stop the Sheep Auto Drafter

1. Press the red Stop button  on the remote control.
 - The entry gate will close and the exit gate will open.
 - The white LED mode lamp will begin to flash.

Note: If you were operating in Automatic Release Mode any operation the unit was carrying out will be completed before an animal is released, (e.g. if the unit was weighing an animal the weight will be locked into the scale indicator before the exit gate is opened).

2. To start operations again press either the Retain/Release , the Start button  on the remote control or press the Entry Gate button on the Control Bridge.
 - Pressing Start on the remote or pressing the Entry Gate button on the Control Bridge will put the unit into Automatic Release Mode.
 - Pressing Retain/Release will put it into Manual Release Mode.



Using the E-Stop button to halt Sheep Auto Drafter operation

It is likely that you will use the E-Stop button very rarely as it is intended for use in emergency situations only. It is the large red button situated at the front of the Control Bridge (see *Figure 18*).



Figure 18. E-Stop button position.

To use the E-Stop button

1. In an emergency hit the E-Stop button (situated on the Control Bridge).
 - The red E-Stop LED will start to flash.
 - The air pressure will be removed - this will allow you to manually open the entry or exit gates if you need to.
2. Resolve the issue that has occurred.
3. Release the E-Stop button.
 - The white mode LED will start to flash.
4. Press either the Retain/Release  or the Start button  on the remote control, or the Entry Gate button on the Control Bridge only.
 - Pressing Start on the remote or pressing the Entry Gate button on the Control Bridge will put the unit into Automatic Release Mode.
 - Pressing Retain/Release will put it into Manual Release Mode.

- The unit will continue operations from the point it was halted, (e.g. if you were weighing animals and an animal had just been captured then after restarting it would weigh the animal and release it).

Using without weighing (no scale attached)

Occasionally you may wish to use the Sheep Auto Drafter without the scale indicator attached, (e.g. if you are just wanting to record animals' EIDs). The Sheep Auto Drafter can still operate without the scale indicator.

To set up the Sheep Auto Drafter without the scale indicator

1. Connect the loop back cable into the socket on the Control Bridge, instead of the scale indicator, so that the load cells are not connected (see *Figure 19*).



Figure 19. Attaching the loop back cable.

TURNING THE SHEEP AUTO DRAFTER OFF

At the end of each session you will want to turn the Sheep Auto Drafter off.

To turn the Sheep Auto Drafter off

1. Press and hold the Power button (situated on the Control Bridge - see *Figure 18*) down for a couple of seconds.
 - The exit gate will open, the entry gate will shut, and the sorting unit gates will move to the sides (if not there already).
Note: If you have the E-Stop button pressed then the gates will stay in their current positions.
 - If you are in Automatic Release Mode the Sheep Auto Drafter will attempt to process any sheep in the unit before it switches off, (e.g. if it is a weighing session and there is a sheep in the unit it will be weighed and released). This process however will be affected by where in the process the unit is when you press the power button, (e.g. if you press it before the scale indicator has had a chance to make a drafting decision, then the animal will be released out the centre of the sorting unit).
 - Finally, the air supply to the gates will be switched off and the LED lamps will turn off.

Notes:

- If you want to stop all power use, (e.g. if you are using a battery to power the unit and you want to save power), then you will need to disconnect the power cable as well, or switch the power source off.
- It is a good idea to make sure the caps are on the sockets where the antennae cables emerge from the side panels at the RFID reader end when the Sheep Auto Drafter is not in use. This will prevent dirt and moisture from getting into the sockets.

CARE AND MAINTENANCE

The Sheep Auto Drafter is of robust design so that it can withstand typical farming conditions, as a result it is resilient in most situations. However following the instructions below will help you to get the best results from your unit and to avoid damaging it.

Cleaning instructions

It is inevitable that dung and other dirt will be tracked through the unit during routine use. It is best to clear the build up of these materials from some key areas regularly so that the unit will operate effectively:

- Under the floor. A build up of material may touch the floor and affect the unit's weighing accuracy.
- Around the gate area. Material gathering here may hamper gate movement.
- Between the Sheep Auto Drafter and the sorting unit. A build up here may touch the floor and affect the unit's weighing accuracy.

To clean the unit

- Remove the side panels.
- Sweep or wash the floor.
- Scrape out any build up of material from around the gates, under the floor and between the Sheep Auto Drafter and sorting unit.

Notes:

- It is acceptable to clean the unit down with a water blaster but do NOT spray up under the bridge area or around the two scale head/reader towers with a high pressure blast that could drive water into the bridge.
- Take care that you do not drive water into the loadcell assemblies by directing a high pressure jet on this area (you would need to have the sheep auto drafter on its side to pose this risk).
- Washing the unit down at a car wash station where you apply soapy water etc under control of the operator is acceptable as long as the above notes are taken into account when rinsing the unit down.
- When towing on a trailer there MUST be a cover over the sheep auto drafter to prevent rain driving into the bridge area where the main circuit board is.

Parts replacement

The following parts can be replaced:

- load cells
- circuit board (inside Control Bridge)
- air control valves
- air cylinders
- lower gate dampers

Contact your Gallagher representative to find out where to get the parts and how to install them.

Actions to avoid

Generally speaking the Sheep Auto Drafter will withstand most of the conditions, and chemicals, typically encountered in the farming environment, however avoiding the following, is essential:

- using the Control Bridge to lift the unit, (e.g. by inserting fork lift prongs under the Control Bridge).
- Resting objects on top of the Control Bridge.

TROUBLESHOOTING

There are a number of steps you can take when the Sheep Auto Drafter is not operating correctly to identify and resolve the issue.

1. General LED check.

The first thing to do when you encounter an issue is to check the LED lamps on the Control Bridge. They may give you an indication of where the issue is. *Table 2* lists the LEDs and what their different states indicate.

2. Check all cables are attached firmly and working.

- Check your power and air cables are attached and working.
The green power LED should be on. The pressure gauge should register air pressure in the green zone.
- Check the cables between the unit, the scales and the RFID reader are all attached correctly.



3. Activate flash fault sequence.

If the unit has identified it has a fault the multiple red LED lamps on the front of the Control Bridge will start to flash. For some faults you can activate a flash sequence which will help you to identify which area the issue is in. Find out how to activate the fault flash sequence below.

4. Go through issue checklist.

The issue checklist (below) may also give you some ideas on how to resolve the fault.

To use the LED fault flash sequence

1. If a fault is not immediately obvious activate the LED fault flash sequence by briefly pressing the Power button down for around 1 second (it is situated on the Control Bridge - see *Figure 14*).
 - Don't press it for 2 seconds or more as you will turn the Sheep Auto Drafter off.
2. The red LED fault lamps will turn on solidly and after 3 seconds, the white mode LEDs will flash the fault code, after which the red LED fault lamps will remain solidly on for a further 3 seconds before resuming their 1 second flash rate.
3. Once you have determined what the issue is and you have fixed it then press the Start  or Retain/Release  button on the remote control to continue or press the Entry Gate button on the Control Bridge.
 - If the fault hasn't been fixed the fault LED will continue flashing.
 - If fault has been fixed the fault LED will turn off and the Sheep Auto Drafter will begin operating again.

- If you press Start on the remote control or the Entry Gate button on the Control Bridge, then the unit will continue in Automatic Release Mode. If you press Retain/Release then it will continue in Manual Release Mode.



Note: You are able to switch the Sheep Auto Drafter off using the Power button on the Control Bridge when it has a fault, but you will need to resolve the issue when you next start it up before it will operate correctly, (i.e. if the fault lamps are flashing when you switch it off they will resume flashing when you next start it up).


Issue checklist and possible solutions

If the red fault LED is on:

1 flash

Sheep (or other object) jammed in the Sheep Auto Drafter gates.

- When something becomes jammed in the gates the gates will continue attempting to close for a period of time. If they do not succeed then the Sheep Auto Drafter will go into the fault state. You need to clear the gate and then either press the Start  button or Retain/Release  buttons on the remote control or the Entry Gate button on the Control Bridge before the unit will begin to operate again.

Note: You can also release jammed animals prior to the Sheep Auto Drafter going into a fault state by pressing the Gate button  while the gate is still trying to close. This will open the gate so the animal is released, or can be pushed out.

The Sheep Auto Drafter or sorting unit gates won't operate.

- Check your compressed air supply:
 - Does the air pressure gauge have a reading in the green zone (4-6bar)?
 - Is the compressor on and working?
 - Are the air lines undamaged and connected correctly?
- Faulty solenoid, sensor or ram
 - If one of these is faulty it will need replacing.

2 flashes

No power to load cells.

- Check the scale indicator is attached and switched on, or
- Make sure the loopback cable is correctly connected.

3 flashes

Fault in the loopback cable connection.

- Check that you have the loopback cable correctly attached.

4 flashes

Scale not operating (not communicating).

- Check the scale indicator is switched on.
- Check the RS232 cable is securely attached (between the Sheep Auto Drafter and the scale indicator).
- Check the scale indicator communication settings are correct. Check you have the correct port set up in the scale indicator for the connection between the scales and unit (refer to the appropriate user manual).

5 flashes

Remote control not working due to PCB issue.

- Replace the PCB (a rare fault). Contact your Gallagher representative for advice on how to repair this issue.

6 flashes

Solenoid short on the 12V rail. Contact your Gallagher representative for advice on how to repair this issue.

7 flashes

Short on the 5V loopback rail. Check for dirt or water in the indicator cable or loopback connector, if they are clean and dry and the fault persists, contact your Gallagher representative for advice on how to repair this issue.

10 flashes

Unit is unable to identify the cause of the fault. Contact your Gallagher representative for advice on how to repair this issue.

Potential issues not identified by fault flash sequences:**Sheep Auto Drafter not operating**

- Is the green power LED on?
If no, then check there is a functional power supply connected.
- Is the white mode LED flashing?
(see cause below)
- Is the red E-Stop LED flashing?
(see cause below)
- Is the air connected and at sufficiently high pressure?
Check the pressure gauge to see if there is enough pressure (pressure should be in the green zone on the pressure gauge).
- Are the red fault LEDs flashing?
If yes, then there is an issue that you need to resolve before the unit will begin to work again. To find out how to activate the fault flash sequence see the instructions above.

Green power LED flashing


The power supply is low.

Although the Sheep Auto Drafter can continue to operate it may be worthwhile checking your power supply.

White mode LED flashing

Single flash

The Sheep Auto Drafter is in standby and ready to operate.

Press the Start  or Retain/Release  button on the remote control to continue or press the Entry Gate button on the Control Bridge for 2 seconds or more.

Double flash

The Sheep Auto Drafter has been stopped using the Entry Gate button on the Control Bridge.

Press the Entry Gate button on the Control Bridge to resume operation.

Red E-Stop LED flashing

The E-Stop button is depressed.

Release it and then press either the Start  or Retain/Release  button on the remote control to continue or press the Entry Gate button on the Control Bridge for 2 seconds or more.

Remote control won't work or the auto sorting unit is not responding to the remote control

- Are the batteries flat?
Try changing them.
- Is the remote control damaged?
- Was the Entry Gate button on the Control Bridge pressed to release an animal? This button must be pressed again to resume operation.

There is a short in a solenoid or the cabling

The unit will not operate. Contact your Gallagher representative for advice on how to repair this issue.

No drafting decision made

- Has the scale indicator been set up correctly for drafting?
- Have either "drafting by weight" or "drafting by list" instructions been set up in your scale indicator?
- Is the RS232 cable securely attached between the scale indicator and the Sheep Auto Drafter?
- Is the RS232 cable attached to the correct port on the scale indicator?

Multiple sheep in Sheep Auto Drafter

See *To clear multiple animals from the unit* (p 36) for instructions on how to deal with this.

EID failure to read

Is it a one off failure, an occasional failure (sporadic) or a continuous failure?

If it is...	then...
a one off failure	Does the animal have a tag?
an occasional failure	<ul style="list-style-type: none"> Are there a lot of metal objects, (e.g. yard fences or gates), close to the Sheep Auto Drafter? Metal, particularly if it is rubbing other metal objects, can set up an electrical interference which impedes the antennae's ability to identify EIDs. Is it just animals with a tag in a particular ear, (i.e. right or left) that are not being read? If this is the case one of the antennae may not be working.
a continuous failure	Is the RFID reader attached to the Sheep Auto Drafter antennae?

SPECIFICATIONS

General

AC Input Voltage	100 - 240V
DC Input Voltage	11.5 - 15V
Environmental Protection Rating	IP55
Operating Temperature	-15° to 60° C

Dimensions

	Packaged	Footprint
Length	1850 mm	2438mm
Width	820 mm	790mm
Height	1550 mm	
Weight:		
Crate Assembly	125kg	
Draft module	44kg	

Footprint

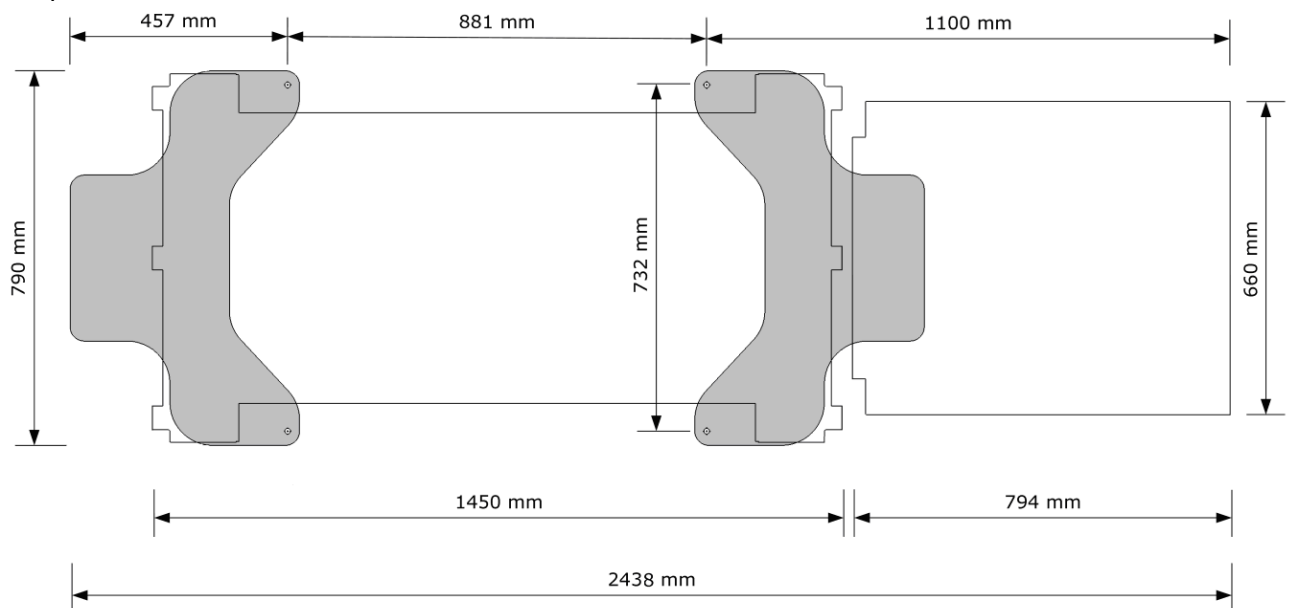


Figure 20. Sheep Auto Drafter and sorting unit dimensions.

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